

**AMENDMENTS TO THE CLAIMS:**

Applicant proposes to amend claims 1, 2, 7-9, 14-17, 22, 27, 32, and 37 as indicated in the following listing of claims, which replaces all prior versions and listings of claims in the application:

1. (Currently Amended) A method for communicating between a first private network and a second private network configured from nodes in a public network, comprising:

receiving a packet from a source node in the first private network;

determining whether the packet is destined for the second private network;

and

obtaining an address mapping corresponding to a destination node in the second private network and acquiring a channel key associated with a channel based on the determination, wherein the channel comprises a plurality of virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the destination node, such that only the channel nodes are permitted to communicate over the channel, and wherein the channel key is updated for a modification of the channel nodes; and

forwarding the packet over ~~a the~~ channel to ~~a the~~ destination node in the ~~second private network based on the determination, wherein the channel comprises a plurality of virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the destination node, such that only the channel nodes can communicate over the channel.~~

2. (Currently Amended) The method of claim 1, said forwarding comprising:  
  
~~obtaining an address mapping corresponding to the destination node  
based on the determination; and~~  
  
sending the packet to the destination node using the address mapping,  
the address mapping reflecting a relationship between an internal  
address for the destination node for use in communicating among  
nodes in the second private network and an external address for  
the destination node suitable for communicating over the public  
network.
3. (Previously Presented) The method of claim 2, said sending further comprising,  
  
adding the external address to the packet.
4. (Previously Presented) The method of claim 2, said sending further comprising,  
  
encrypting the packet.
5. (Previously Presented) The method of claim 2, said obtaining comprising,  
  
accessing the address mapping based on a determination that the packet  
is destined for the second private network.

6. (Previously Presented) The method of claim 1, said determining comprising,  
  
determining whether an address mapping exists for a destination address  
in the packet.
7. (Currently Amended) A method for communicating between a first private  
network and a second private network configured from nodes in a public network,  
comprising:
- receiving a packet from a source node in the first private network;
  - determining whether the packet is destined for the second private network;
  - obtaining an address mapping corresponding to a destination node in the  
second private network and acquiring a channel key associated  
with a channel based on the determination, wherein the channel  
comprises a plurality of virtual links through the public network that  
connects a plurality of channel nodes, the channel nodes including  
the source node and the destination node, such that only the  
channel nodes are permitted to communicate over the channel, and  
wherein the channel key is updated for a modification of the  
channel nodes; and
  - sending the packet over ~~[[a]]~~ the channel to the destination node using the  
address mapping, the address mapping reflecting a relationship  
between an internal address for the destination node for use in  
communicating among nodes in the second private network and an  
external address for the destination node suitable for  
communicating over the public network, ~~wherein the channel  
comprises a plurality of virtual links through the public network that  
connects a plurality of channel nodes, the channel nodes including~~

~~the source node and the destination node, such that only the  
channel nodes can communicate over the channel.~~

8. (Currently Amended) A method for communicating between a first private network and a second private network that uses a public network infrastructure, comprising:

receiving a packet from a source node in the second private network;

determining whether the packet is destined for the second private network;  
and

obtaining an address mapping corresponding to a router node in the first  
private network and acquiring a channel key associated with a  
channel based on the determination, wherein the channel  
comprises a plurality of virtual links through the public network that  
connects a plurality of channel nodes, the channel nodes including  
the source node and the router node, such that only the channel  
nodes are permitted to communicate over the channel, and wherein  
the channel key is updated for a modification of the channel nodes;  
and

forwarding the packet over ~~[[a]] the~~ channel to a destination node in the  
first private network ~~based on the determination, wherein the  
channel comprises a plurality of virtual links through the public  
network that connects a plurality of channel nodes, the channel  
nodes including the source node and the destination node, such  
that only the channel nodes can communicate over the channel.~~

9. (Currently Amended) The method of claim 8, said forwarding comprising:

~~obtaining an address mapping corresponding to a router node based on the determination;~~

sending the packet to the router node using the address mapping, wherein the router node forwards the packet to the destination node based on an internal address in the packet for the destination node suitable for communicating among nodes in the first private network.

10. (Previously Presented) The method of claim 9, said sending further comprising,

adding, to the packet, an external address for the router node suitable for communicating over the public infrastructure.

11. (Previously Presented) The method of claim 9, said sending further comprising,

encrypting the packet.

12. (Previously Presented) The method of claim 9, said obtaining comprising,

accessing the address mapping based on a determination that the packet is not destined for the second private network.

13. (Previously Presented) The method of claim 8, said determining comprising,

determining whether an address mapping exists for a destination address in the packet.

14. (Currently Amended) A method for communicating between a first private network and a second private network that uses a public network infrastructure, comprising:

receiving a packet from a source node in the second private network;

determining whether the packet is destined for the second private network;

obtaining an address mapping corresponding to a router node and  
acquiring a channel key associated with a channel based on the  
determination[[]], wherein the channel comprises a plurality of  
virtual links through the public network that connects a plurality of  
channel nodes, the channel nodes including the source node and  
the router node, such that only the channel nodes are permitted to  
communicate over the channel, and wherein the channel key is  
updated for a modification of the channel nodes; and

sending the packet over ~~[[a]]~~ the channel to the router node using the  
address mapping, wherein the router node forwards the packet to a  
destination node in the first private network based on an internal  
address in the packet for the destination node suitable for  
communicating among nodes in the first private network, ~~wherein~~  
~~the channel comprises a plurality of virtual links through the public~~  
~~network infrastructure that connects a plurality of channel nodes,~~  
~~the channel nodes including the router node and the source node,~~  
~~such that only the channel nodes can communicate over the~~  
~~channel.~~

15. (Currently Amended) An apparatus for communicating between a first private network and a second private network that uses a public network infrastructure, comprising:

a memory having program instructions; and

a processor responsive to the program instructions to:

receive a packet from a source node in the first private network,

determine whether the packet is destined for the second private network, and

acquire a channel key associated with a channel based on the determination, wherein the channel comprises a plurality of virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and a destination node in the second private network, such that only the channel nodes are permitted to communicate over the channel, and wherein the channel key is updated for a modification of the channel nodes, and

forward the packet over ~~[[a]] the~~ channel to ~~a~~ the destination node in the second private network based on the determination, wherein the channel comprises a plurality of virtual links through the public network infrastructure that connects a plurality of channel nodes, the channel nodes including the source node and the destination node, such that only the channel nodes can communicate over the channel.

16. (Currently Amended) An apparatus for communicating between a first private network and a second private network that uses a public network infrastructure, comprising:

a memory having program instructions; and

a processor responsive to the program instructions to:

receive a packet from a source node in the second private network,

determine whether the packet is destined for the second private network, and

acquire a channel key associated with a channel based on the determination, wherein the channel comprises a plurality of virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and a destination node in the first private network, such that only the channel nodes are permitted to communicate over the channel, and wherein the channel key is updated for a modification of the channel nodes, and

forward the packet over ~~[[a]] the~~ channel to ~~a the~~ destination node in the first private network based on the determination, wherein the channel comprises a plurality of virtual links through the public network infrastructure that connects a plurality of channel nodes, the channel nodes including the source node and the destination node, such that only the channel nodes can communicate over the channel.



17. (Currently Amended) A computer-readable medium containing instructions for performing a method for communicating between a first private network and a second private network that uses a public network infrastructure, the method comprising:

receiving a packet from a source node in the first private network;

determining whether the packet is destined for the second private network;

obtaining an address mapping corresponding to a destination node in the second private network and acquiring a channel key associated with a channel based on the determination, wherein the channel comprises a plurality of virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the destination node, such that only the channel nodes are permitted to communicate over the channel, and wherein the channel key is updated for a modification of the channel nodes; and

sending the packet over ~~[[a]] the~~ channel to the destination node using the address mapping, the address mapping reflecting a relationship between an internal address for the destination node for use in communicating among nodes in the second private network and an external address for the destination node suitable for communicating over the public infrastructure, ~~wherein the channel comprises a plurality of virtual links through the public network infrastructure that connects a plurality of channel nodes, the channel nodes including the source node and the destination node, such that only the channel nodes can communicate over the channel.~~

18. (Previously Presented) The computer-readable medium of claim 17, said sending further comprising,  
  
adding the external address to the packet.
19. (Previously Presented) The computer-readable medium of claim 17, said sending further comprising,  
  
encrypting the packet.
20. (Previously Presented) The computer-readable medium of claim 17, said obtaining comprising,  
  
accessing the address mapping based on a determination that the packet is destined for the second private network.
21. (Previously Presented) The computer-readable medium of claim 17, said determining comprising,  
  
determining whether an address mapping exists for a destination address in the packet.

22. (Currently Amended) A computer-readable medium containing instructions for performing a method for communicating between a first private network and a second private network that uses a public network infrastructure, the method comprising:

receiving a packet from a source node in the second private network;

determining whether the packet is destined for the second private network;

obtaining an address mapping corresponding to a router node and  
acquiring a channel key associated with a channel based on the  
determination, wherein the channel comprises a plurality of virtual  
links through the public network that connects a plurality of channel  
nodes, the channel nodes including the source node and the router  
node, such that only the channel nodes are permitted to  
communicate over the channel, and wherein the channel key is  
updated for a modification of the channel nodes; and

sending the packet over ~~[[a]]~~ the channel to the router node using the  
address mapping, wherein the router node forwards the packet to a  
destination node in the first private network based on an internal  
address in the packet for the destination node suitable for  
communicating among nodes in the first private network; ~~and~~

~~wherein the channel comprises a plurality of virtual links~~  
~~through the public network infrastructure that~~  
~~connects a plurality of channel nodes, the channel~~  
~~nodes including the router node and the destination~~  
~~node, such that only the channel nodes can~~  
~~communicate over the channel.~~

23. (Previously Presented) The computer-readable medium of claim 22, said sending further comprising,
- adding, to the packet, an external address for the router node suitable for communicating over the public infrastructure.
24. (Previously Presented) The computer-readable medium of claim 22, said sending further comprising,
- encrypting the packet.
25. (Previously Presented) The computer-readable medium of claim 22, said obtaining comprising,
- accessing the address mapping based on a determination that the packet is not destined for the second private network.
26. (Previously Presented) The computer-readable medium of claim 22, said determining comprising,
- determining whether an address mapping exists for a destination address in the packet.

27. (Currently Amended) An apparatus for communicating between a first private network and a second private network configured from nodes in a public network infrastructure, comprising:

means for receiving a packet from a source node in the first private network;

means for determining whether the packet is destined for the second private network;

means for obtaining an address mapping corresponding to a destination node in the second private network and acquiring a channel key associated with a channel based on the determination; and

means for sending the packet over a the channel to the destination node using the address mapping, the address mapping reflecting a relationship between an internal address for the destination node for use in communicating among nodes in the second private network and an external address for the destination node suitable for communicating over the public infrastructure, ~~wherein the channel comprises a plurality of virtual links through the public network infrastructure that connects a plurality of channel nodes, the channel nodes including the source node and the destination node, such that only the channel nodes can communicate over the channel.~~

28. (Previously Presented) The apparatus of claim 27, said means for sending further comprising,

means for adding the external address to the packet.

29. (Previously Presented) The apparatus of claim 27, said means for sending further comprising,
- means for encrypting the packet.
30. (Previously Presented) The apparatus of claim 27, said means for obtaining comprising,
- means for accessing the address mapping based on a determination that the packet is destined for the second private network.
31. (Previously Presented) The apparatus of claim 27, said means for determining comprising,
- means for determining whether an address mapping exists for a destination address in the packet.

32. (Currently Amended) An apparatus for communicating between a first private network and a second private network configured from nodes in a public network infrastructure, comprising:

means for receiving a packet from a source node in the second private network;

means for determining whether the packet is destined for the second private network;

means for obtaining an address mapping corresponding to a router node and acquiring a channel key associated with a channel based on the determination;

means for sending the packet over the channel to the router node using the address mapping, wherein the router node forwards the packet to a destination node in the first private network based on an internal address in the packet for the destination node suitable for communicating among nodes in the first private network, ~~and~~

~~wherein the channel comprises a plurality of virtual links through the public network infrastructure that connects a plurality of channel nodes, the channel nodes including the router node and the destination node, such that only the channel nodes can communicate over the channel.~~

33. (Previously Presented) The apparatus of claim 32, said means for sending further comprising,

means for adding, to the packet, an external address for the router node suitable for communicating over the public infrastructure.

34. (Previously Presented) The apparatus of claim 32, said means for sending further comprising,

means for encrypting the packet.

35. (Previously Presented) The apparatus of claim 32, said means for obtaining comprising,

means for accessing the address mapping based on a determination that the packet is not destined for the second private network.

36. (Previously Presented) The apparatus of claim 32, said means for determining comprising,

means for determining whether an address mapping exists for a destination address in the packet.



37. (Currently Amended) A method for communicating between a first private network and a second private network configured from nodes in a public network, comprising:

receiving, at a router node, a first packet from a source node in the first private network, wherein the router node facilitates connection between the first private network and the second private network;

determining whether the first packet is destined for the second private network;

obtaining an address mapping corresponding to a second destination node in the second private network ~~based on the determination and~~ acquiring a channel key associated with a channel based on the determination, wherein the channel comprises a plurality of virtual links through the public network that connects a plurality of channel nodes, the channel nodes including the source node and the router node, such that only the channel nodes are permitted to communicate over the channel, and wherein the channel key is updated for a modification of the channel nodes;

sending the packet over ~~[[a]] the~~ channel to the second destination node using the address mapping, the address mapping reflecting a relationship between an internal address for the second destination node for use in communicating among nodes in the second private network and an external address for the second destination node suitable for communicating over the public infrastructure, ~~wherein the channel comprises a plurality of virtual links through the public network that connects a plurality of channel nodes, the channel nodes including a first destination node in the first private network and the router node and the second destination node, such that only the channel nodes can communicate over the channel;~~

receiving a second packet from a source node in the second private network;

determining whether the second packet is destined for the second private network;

obtaining an address mapping corresponding to the router node based on the determination that the second packet is not destined for the second private network; and

sending the packet over the channel to the router node using the address mapping corresponding to the router node, wherein the router node forwards the packet to ~~the~~ a first destination node in the first private network based on an internal address in the second packet for the first destination node suitable for communicating among nodes in the first private network.